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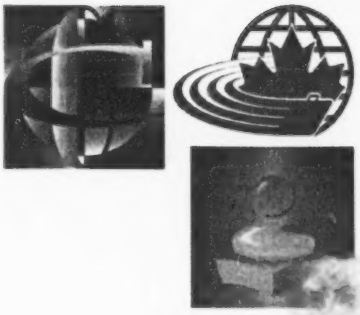
Delaying Post-secondary Education: Who Delays and for How Long?



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Darcy Hango
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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Acronyms

The following acronyms are used in this publication:

CEGEP	Collège d'enseignement général et professionnel
PSE	Post-secondary education
YITS	Youth in Transition Survey

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Executive summary

Not all high school graduates who attend a post-secondary institution go immediately after completing their diploma. An ever-increasing number of Canadian youth choose to remain out of the education system for a period of time prior to re-entering. A great deal of what we know about a gap year comes from other countries, particularly the United Kingdom. Who delays and for long are, however, two questions that remain to be answered in the Canadian context. The current paper uses all 5 cycles of the Youth in Transition Survey (YITS) to address the scant attention paid in the Canadian literature to the delay of the start of a post-secondary degree or diploma. Kaplan Meier results show that the median length of time between high school graduation and start of the first post-secondary education (PSE) program is 4 months; however, this appears to be substantially longer for males, First Nations youth, Anglophones, youth from Ontario, and youth whose parents have low levels of educational attainment. Equally influential were characteristics during the high school years. For example, youth with low marks, who worked many hours in paid employment while in high school, who skipped classes regularly, who took part in a lot of extracurricular activities not organized by the school, and whose close friends said they were not planning on going to PSE had median gap times between high school graduation and the start of post-secondary studies that were much longer than the average. Cox Proportional Hazard models confirm the robustness of several of the descriptive findings, including the effects of gender, province of high school, parental education, working during high school, marks, extracurricular activities, and the education plans of close friends.

1. Introduction

High school graduation and eventual post-secondary (PSE) attendance are the norm among Canadian youth. Recent evidence suggests that the majority of Canadian youth leave high school with a diploma. Close to 80% obtain their high school diploma by age 18 to 20, with this share increasing to over 90% by age 26 to 28. Moreover, by age 18 to 20, about 55% of young adults are enrolled in some form of post-secondary education, with this share increasing to 81% by age 26 to 28 (Shaienks and Gluszynski 2009).

A typical and direct path to PSE involves high school graduates completing high school in May or June of any given year and then entering PSE in September, a gap of about 4 months or less. These individuals, for one reason or another, likely have made their decision to go directly to PSE during the last couple of years of high school. For these young adults, the path is straightforward: finish high school and immediately continue with education prior to entering the work force. These students may be more academically focused, they may lack other opportunities (for paid work, volunteer work, or travel) or they may simply be under pressure by family and friends to continue with their education without delay. The fear among many parents and students is that the more time spent out of school, the less chance of ever starting PSE. In fact, some recent work from the United States suggests that even if delayers do return, they are less likely to eventually graduate with a bachelor's degree (Bozick and De Luca 2005). Yet, there is mixed empirical evidence on the benefits that time away from school may confer on young adults. Some suggest positive labour market outcomes (Ferrer and Menendez 2009), while others find the relationship to labour market outcomes more complex, depending on the specific PSE path followed (Hango 2010).

It may be premature, however, to discuss the effects of taking time off between high school and PSE on later outcomes without knowing the extent of the delay (measured by median delay times) and the important correlates associated with the timing of the delay. Our knowledge on this topic is limited in Canada. For instance, do we define a 'gap year' similar to work from the United Kingdom? Jones (2004: 24) defined a 'gap year' in the United Kingdom as "any period of time between 3 and 24 months which an individual takes 'out' from formal education, training or the workplace, and where the time out sits in the context of a longer career trajectory." The definition does not conform to a strict 12-month calendar in order to take into account heterogeneity and flexibility of individuals wanting to re-start school at different points in the calendar year. For this reason, Jones (2004) suggests that perhaps a better term would be 'gap period' not 'gap year.' Heath's (2007) definition of a gap year in the UK is more precisely defined as 15 months. Or do we define time out of school in similar terms to work from the United States? Bozick and DeLuca (2005) for instance define 'on-time' enrolment in PSE as being any student who starts PSE within seven months of

graduating from high school, while starting past seven months is considered to be 'delayed' enrolment. In Canada, few studies have specifically examined this issue. Of the ones that have, the range of defining 'delayed' attendance at PSE has ranged from 4 months (see Hango and de Broucker 2007; Hango 2010) to one year (see Ferrer and Menendez 2009; and Tomkowicz and Bushnik 2003).

The current paper attempts to bolster our knowledge on the issue of taking time away from school by focusing exclusively on measuring median delay times between high school graduation and starting a first PSE program and on identifying the factors either speeding up or slowing down this transition. The specific type of PSE is not considered in this paper, but rather the first PSE program of any type is used. We know from prior work that outcomes vary significantly by PSE type, and also that universities, colleges, and other types of degree/diploma-granting institutions may have different requirements for entry. However, the focus on any PSE experience frees us from making any judgements or conclusions based on the type of institution a young adult may attend. The principal concern therefore is to attempt to model the transition between high school and the post-secondary education system so that we can address concerns about youth mis-timing their education or disengaging from the education system entirely. Additional concerns regarding outcomes related to PSE graduation or the labour market are important, but deserve special attention and are left for future work.

The longitudinal Youth in Transition Survey (YITS) provides an ideal dataset for this analysis since it tracks the same group of youth as they leave high school and transition into young adulthood. The data used here culminate at a final age of 26 to 28 in 2008, ages at which the majority of Canadian youth have finished high school and have either re-entered the post-secondary system or are contemplating doing so. The current study focuses on high school graduates, a necessary restriction so that time to first PSE can be measured. Admittedly this restriction leaves out those young adults who have not graduated from high school, a group that is very vulnerable for later socioeconomic difficulties (Chen and Kaplan 2003; de Broucker 2005).[1] However, a strength of the current paper is that youth are followed until their mid-to late 20s, allowing for youth who may have ever dropped out of high school to have gone back and completed their high school diplomas.

2. Literature review

2.1 Taking time off and the transition to adulthood

There are two modes of thought regarding delaying post-secondary attendance following high school completion: it is either beneficial or harmful. On the one hand, proponents of the benefits of a delay expound the virtues of self-discovery through lived experiences. The idea here is that youth, and society in general, will benefit from young adults taking time away from their studies to learn about themselves and the world around them (Ahlgren 2006; Braiker 2004; Pope 2004). Hypothetically, young adults will become better citizens from having had experiences outside of the secondary and post-secondary education systems. In fact, several of the most common factors cited for taking time off are focused around 'the desire to take a break from formal education,' 'to gain a broader horizon on life,' 'to experience different people, cultures and places,' 'to gain personal life skills,' and 'to make a contribution to society' (Jones 2004). On the other hand, evidence illustrating a negative aspect of taking time away from formal schooling shows lower PSE graduation rates (Bozick and DeLuca 2005) and lower returns to earnings (Light 1995). Taking time off between the secondary and post-secondary system may also disrupt the 'normative' path to adulthood, which in the past meant that youth would finish school, start a career, marry and then have children (Hogan 1978). However, we know that the pattern and process of becoming an adult are intertwined with education and that status and role changes do not happen independently or in an orderly fashion (Marini 1987; Rindfuss, Swicegood and Rosenfeld 1987; Rindfuss 1991; Shanahan 2000).

Assessing whether taking time away from formal education is beneficial or harmful is beyond the scope of this paper. Instead, this report focuses on identifying the characteristics of those who are more or less likely to delay their transition. With this in mind, the review of the literature that follows will focus on studies that report on the factors that delay or speed up the transition to the post-secondary education system, augmented by literature related to factors affecting high school completion and PSE attendance.

2.2 Who delays the transition to post-secondary education?

In general, few papers deal specifically with the timing to first PSE experience. As a result, literature related more generally to high school completion and eventual PSE participation proves invaluable as it can help illuminate the factors that are interconnected with the issue of timing. Influential factors on the timing of first PSE experience can be summarized into five main areas: (1) demographic characteristics, (2) geographic location, (3) family of origin, (4) academic performance and commitment to education, and (5) potential barriers. This latter category pertains to barriers related to finishing high school as well as starting PSE.

2.2.1 Demographic factors and education

At the most basic level, educational outcomes vary by several demographic characteristics. Gender for example is an important indicator affecting educational attainment. Women outnumber men at universities (Clark 2000; Zeman, Knighton and Bussière 2004) and they are more likely than men to finish university (Buchmann and DiPrete 2006; Frenette and Zeman 2007; Parsons and McMullen 2009). In terms of pace to PSE after high school graduation, Bozick and DeLuca (2005) found that males delay about two months more on average than females. Similarly, in Canada, compared to males, larger shares of female high school graduates went to PSE within four months of graduating from high school (Hango 2008) or within twelve months (Tomkowicz and Bushnik 2003).

Various cultural factors are also important for educational attainment. In terms of immigrant status, we know that, on average, children of immigrants both achieve (Boyd 2002), as well as aspire to achieve (Taylor and Krahn 2005) higher levels of education than their Canadian born counterparts. Yet, we have limited evidence on the pace with which children of immigrants enter PSE following high school graduation. Hango and de Broucker (2007) provide some descriptive evidence to suggest that young adults born outside of Canada may be more represented among the group going directly to PSE who eventually receive a university degree.

Being of Aboriginal descent has a strong association with low levels of education (Tait 1999), a fact that continues to be a contributing factor to low levels of earnings for this group of Canadians (Walters, White and Maxim 2004). Moreover, in the United States, Native Americans were found to have the longest average delay time between high school and PSE, at just over twelve months (Bozick and DeLuca 2005). In Canada, Aboriginal youth were more likely to delay attending PSE by over four months, when compared to high school dropouts (Hango and de Broucker 2007).

Another important cultural indicator is mother tongue. Given historical influences related to the French- and English-speaking populations of Canada, as well as the influence of recent immigrant groups not having a mother tongue of either official language, this is a necessary factor to consider in any analysis of education in Canada. Francophones are more likely to go directly to PSE following high school graduation, regardless of how a gap is defined (Hango and de Broucker 2007; Tomkowicz and Bushnik 2003). The language effect, as we will see below during discussion of provincial differences, is strongly related to the institutional structure of education in Quebec. Meanwhile, given the strong link with recent immigration trends and the fact that recent immigrants have parents with higher education levels and greater educational aspirations for their offspring, youth whose first language is something other than English or French also appear to be more likely to go directly to PSE than to delay (Tomkowicz and Bushnik 2003); however, this may be confined to youth whose mother tongue is neither English nor French who eventually obtain a university degree (Hango and de Broucker 2007).

The institutional structure of education systems varies across Canadian provinces. For example, in Quebec's CEGEP system, youth typically have 11 years of primary and secondary school, followed by up to four years at a CEGEP, which is a required step for further study at university. Furthermore, until 2002/2003,

Ontario students typically graduated after 13 years of elementary/secondary education. As a result of these differences, the percentage of young adults with a college education is much higher in Quebec than in other provinces. Evidence from Tomkowicz and Bushnik (2003) support this claim by finding that 77% of Quebec high school students went to PSE within one year after high school, while only 62% of youth from Ontario followed the same path. They also found that, on average, fairly high proportions of youth in the Atlantic provinces, especially in Nova Scotia, went on to PSE directly from high school, whereas the proportion of youth from Western Canada going directly to PSE was smaller. Size of community also matters for educational attainment; rural youth typically have lower levels of education (Cartwright and Allen 2002) and also tend to delay enrolling in PSE slightly longer than their urban counterparts (Bozick and DeLuca 2005).

2.2.2 Family effects on education

The influence that family of origin has on the lives of adolescents and young adults, while weakening from earlier in childhood, is nonetheless still considerable. Especially important, given the strong link between family of origin and academic achievement is the 'human capital' of the parents. The offspring of parents with higher levels of educational attainment typically obtain high levels of education as well (Breen and Jonsson 2005; Frenette 2007; Finnie, Mueller, Sweetman and Usher 2008). Finnie and colleagues (2008) recently suggested that parental education may be an even more pertinent factor affecting post-secondary attendance than family income. Similarly, a measure that is often used as a proxy for the diminishing effect of parental resources is number of siblings. Generally speaking, the greater the number of siblings, the fewer the resources, either time or money, available to each child; the result is often a lower level of educational attainment among those children (Blake 1989; Downey 1995). Evidence from the United States and the United Kingdom shows that youth from higher socioeconomic backgrounds are less likely to delay the start of PSE compared to youth from families of lower socioeconomic status (Bozick and DeLuca 2005; Jones 2004). A similar relationship is found in Canada, especially for young adults who complete university degrees (Hango and de Broucker 2007).

However, the impact of parental socioeconomic status on educational outcomes is weakened if parents and their children do not communicate regularly or generally have a poor relationship. Past research has found that a greater degree of parental involvement leads to a greater degree of educational success (Fan and Chen 2001; Hango 2007; Ho Sui-Chu and Williams 1996; McNeal 1999). Moreover, the educational expectations parents place on their children can have very lasting effects for their overall educational attainment (Sandefur, Meier and Campbell 2006). Hango and de Broucker (2007) found a strong relationship between parental expectations and youth not delaying the start of PSE, especially if their educational pathway culminated in a university degree.

2.2.3 Academic performance and educational commitment

One of the most important predictors of later educational success is marks in high school; the higher their marks in high school, the more likely students are to graduate from high school as well as attend a post-secondary institution (Hango and de Broucker 2007). Moreover, high school graduates with high average marks also tend to go to PSE within twelve months of completing high school (Tomkowicz

and Bushnik 2003). At the same time, youth who have high academic test scores go to PSE twice as quickly, on average, as youth with low test scores (Bozick and DeLuca 2005). Equally important for future educational outcomes are the youth's educational aspirations. Typically, teens who aspire to achieve high levels of education succeed in obtaining advanced educational degrees (Hagan, MacMillan and Wheaton 1996).

Greater educational commitment should indicate, all else being equal, that a student is serious about his/her educational career. Tomkowicz and Bushnik (2003) found that youth who were very engaged in school went to PSE directly in much higher proportions than youth who were not very engaged. Truancy, meanwhile, is a measure that can be considered to indicate less commitment to education, as well as increased behavioural problems (Hallfors, Vevea, Iritani, Cho, Khatapoush, and Saxe 2002). Students who frequently skip school also typically have a greater risk of not completing high school (Fredricks, Blumenfeld and Paris 2004) which ultimately affects attending a post-secondary institution. In contrast, a greater commitment to education is often associated with a higher frequency of participating in extracurricular activities, especially those organized by the school. For instance, several studies have shown that extracurricular school activities are associated with higher test scores (Cooper, Valentine, Nye and Lindsay 1999), as well as overall academic performance (Broh 2002; Gerber 1996; Zaff, Moore, Papillo and Williams 2003). Participation in extracurricular activities was also found to be linked with greater educational attainment (Eccles and Barber 1999) and with a reduced risk of dropping out of high school (Mahoney and Cairns 1997).

2.2.4 Potential barriers to education

Factors that can act as barriers to education are numerous. Some involve issues related to time use. For example, some activities make it more difficult for high school students to complete homework and study outside of school hours (Shanahan and Flaherty 2001). One such activity that can take youth away from studies outside of school is working in paid jobs. For the most part, working during high school has been found to have generally negative impacts on education (Marsh and Kleitman 2005), but it depends on the amount of work. For example, working many hours at a paid job has been linked to a greater risk of dropping out (Sunter 1993; Bushnik 2003), while low to moderate hours may actually be beneficial (Ruhm 1997; Bushnik 2003). Working in high school has also been linked with delaying PSE attendance. For example, a greater proportion of youth who delay the start of PSE worked at least 20 hours a week during their last year of high school (Tomkowicz and Bushnik 2003). At the same time, Hango and de Broucker (2007) found that teens who worked over twenty hours a week while in high school were over 30% more likely than teens who did not work to delay their post-secondary attendance.

As noted above, a great deal of research finds that extracurricular activities are linked with beneficial educational outcomes. However, the majority of this research focuses almost exclusively on activities that are organized by the school. It has been suggested that "school-based extracurricular activities provide adolescents with a highly structured leisure environment" (Darling 2005: 493). However, what effect do those activities that are not organized by the school have on adolescent educational outcomes? We know that the least beneficial types of

extracurricular activities typically involve unstructured and unsupervised time away from school (Eccles, Barber, Stone and Hunt 2003). Broh (2002) for instance found that, on the one hand, interscholastic sports that were more selective and required more commitment from teens were associated with higher math and reading scores. On the other hand, she found that intramural sports that require less commitment and dedication led to lower math and reading scores. Additionally, participating in vocational clubs was also associated with lower math scores. Similarly, Chambers and Schreiber (2004) conceptualized television viewing as a 'non-academic non-organized' activity and found that it lowered girls' academic achievement.

The detrimental impact of having a birth too early in the life course is well documented (see Furstenberg 2003). Moreover, the factors which influence educational attainment and the risk of becoming a parent are often thought to be jointly determined (Baizán and Martín-García 2006). As a result, the factors affecting the risk of an early birth may also be affecting educational attainment. Thus, having a child may remove the young adult from the education system, at least in the short-term, and while many do return, their overall educational level is often greatly affected (Clark, Dechman, French and MacCallum 1991).

The influence of peers increases as youth reach young adulthood, especially in terms of educational aspirations and behaviour more generally (Ryan 2000; Brooks 2003). Moreover, adolescents also tend to perceive their future in concordance with their peers (Kandel and Lesser 1969; Seltzer and Waterman 1996). As a result, young adults who are surrounded by friends who place low or no value on pursuing higher education may also forgo attending PSE or at least delay the transition (Tomkowicz and Bushnik 2003).

Moving during adolescence, especially changing high schools, can have a detrimental impact on high school graduation (South, Haynie and Bose 2007), as well as on academic test scores and behaviour (Pribesh and Downey 1999; Swanson and Schneider 1999). The effects may be exacerbated as a result of a disruption of important relationships between the family and other influential people (such as teachers and other parents) or what Coleman (1988) refers to as a loss of inter-generational closure. Moving may also be considered to be an increased source of stress or strain, which may affect youth behaviour and educational outcomes (Haveman, Wolfe and Spaulding 1991; Stack 1994). Others, however, blame the negative impact of changing high schools on the fact that the social networks of mobile adolescents tend to have lower expectations concerning their future education than those of non-mobile adolescents (South, Haynie and Bose 2007).

As already discussed, numerous barriers limit the degree to which young adults attend post-secondary institutions; some are related to the family of origin and others to the individual characteristics of the high school student. Still others are related to the cost of attending PSE (Finnie et al 2008). The cost of PSE continues to rise and the financial situation of parents can play an important role in whether or not high school graduates are able to afford to go to PSE (Frenette 2007; Knighton and Mirza 2002). Moreover, a lack of finances is cited by some youth as a barrier impeding their educational aspirations (Bowlby and McMullen 2002). At the same time, wanting to work (Bowlby and McMullen 2002) and caring for children (Furstenberg 2003) are also significant barriers to achieving educational goals. Lastly, given the importance of academic grades, it is not

surprising that many high school students feel that their poor academic grade-point average will negatively affect their educational goals (Bowlby and McMullen 2002). One way in which poor marks may hamper educational goals is by delaying the transition to PSE (Hango and de Broucker 2007; Tomkowicz and Bushnik 2003).

3. Data and methods

3.1 Data

The Youth in Transition Survey (YITS) is a Canadian longitudinal survey designed to examine the patterns of, and influences on, major transitions in young people's lives, particularly with respect to education, training and work. It collects very rich information on education and provides dates of educational enrolment and educational transitions, such as high school graduation, start of a post-secondary program as well as graduation from a post-secondary program. Data were collected from two age groups (cohorts) of youth in the first cycle of the survey in 2000. One began its participation at age 15 (Cohort A) and the other at ages 18 to 20 (Cohort B). In this report, all five cycles of Cohort B are used, providing information every two years from 2000 to 2008. At the time of the last cycle in 2008, respondents were aged 26 to 28. The sample used in all analyses is restricted to youth who had graduated from high school by Cycle 5; thus, about 550 high school leavers and high school continuers (about 5% of the sample) were removed from the analysis. The remaining sample size after removing missing cases is 8,508.

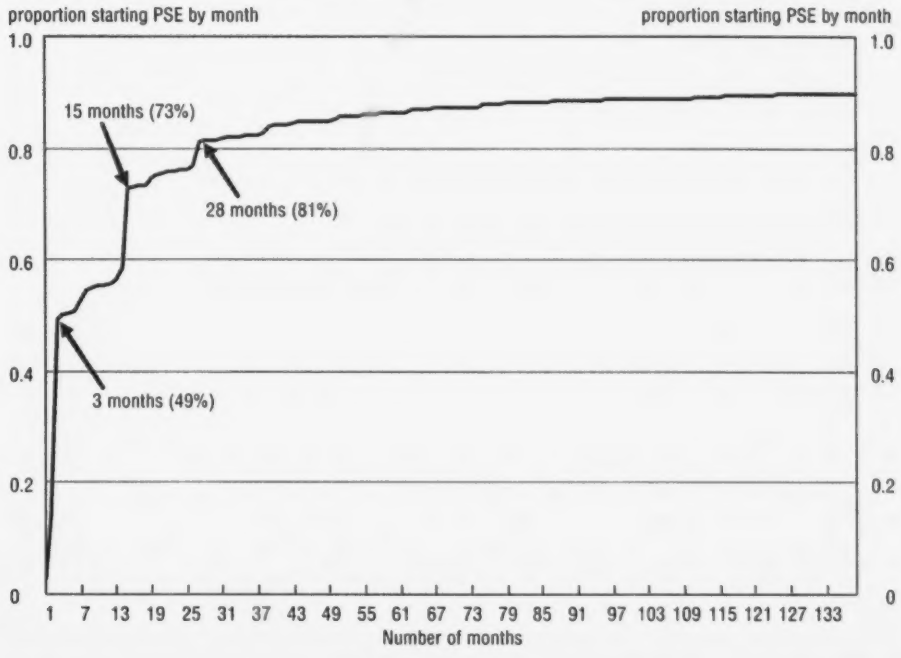
3.2 Dependent variable: timing of first post-secondary enrolment

Cox proportional hazard models are used to examine the impact of pertinent factors on the 'risk' of starting a first post-secondary program prior to age 28 for high school graduates.[2] In each cycle, YITS measures the month and year of high school graduation as well as the month and year of first post-secondary enrolment. As a result, it is possible to update the timing of the end of high school and the start of PSE in each cycle until Cycle 5 when the youth were age 26 to 28. The dependent measure is therefore defined as the probability of starting PSE for the first time, conditional on the fact that respondents have not yet experienced the event and that they were still under observation by Cycle 5. Respondents who had not yet started their first PSE program by December 2007 (the date of the last information on PSE status) were right censored at that time.[3] Approximately, 10% of this sample of high school graduates is right censored, that is, they had not started PSE by December 2007.

Kaplan-Meier life table estimates presented in Chart 1 show the proportion of high school graduates starting PSE in each month after the month of high school graduation. The cumulative proportion of high school graduates increases very quickly immediately after leaving high school. By month 3, almost 50% of youth had started their first PSE program; by 15 months, 73% had started and by 28 months, 81% had started. Not surprisingly, we observe significant increases in the months which correspond to normative times for starting PSE, that is, in the autumn 3 months after graduating high school, the autumn of the 1st year out of school (15 months), and the autumn of the 2nd year out of high school (28 months).

Chart 1

Cumulative proportion of high school graduates who started post-secondary education by age 28 (Weighted Kaplan Meier Life Table Estimates)



Note: Restricted to youth who graduated high school.
Source: Calculations by author. Statistics Canada, Youth in Transition Survey.

3.3 Independent variables

3.3.1 Demographic characteristics and geographic location

In order to take into account some basic and very important background indicators, six measures related to demographic characteristics and geography are included in all models. Demographic characteristics include three dummy variables measuring sex, being Canadian born, being of Aboriginal descent (off-reserve) and mother tongue (English, French, and other). With respect to geographic location, given the complexity of the secondary and post-secondary systems in Canada, it is imperative that a measure for province of high school is included. In the present case, it is sufficient to collapse provinces into four regions based on relative similarity of education system: Atlantic Provinces (Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick), Quebec, Ontario, and Western Canada (Manitoba, Saskatchewan, Alberta and British Columbia).[4] Lastly, we include a dummy variable indicating if the respondent lived in a large population centre in Cycle 1 when they were age 18 to 20.

3.3.2 Family factors

As noted, earlier, the family of origin has a tremendous influence on all facets of a young adult's life, which extends into the education system and decisions to

finish high school and start PSE. Four factors are used to measure family influence. First, parental education (the highest level of education of either parent), which is split into less than high school, high school only, some PSE and PSE graduate, is included. Second, parental educational aspirations for the child is included, based on a question asked of youth of how important it is to their parents that they 'obtain more than a high school diploma.' The response categories are 'not important at all,' 'slightly important,' 'fairly important,' and 'very important.' This measure (ranging from 1 to 4) is used as a continuous variable in the models. Third, given the importance of parent-child communications, a measure is included that assesses the frequency with which youth and parent talk about future education and career options. This variable is categorized as 'never,' 'less than once a year,' 'a few times a year,' 'a few times a month,' 'a few times a week,' and 'daily.' It is included as a categorical variable in order to measure any nonlinear effects of parent-child communications. Lastly, the effect of siblings is captured via a continuous measure ranging from zero siblings to five or more (values range from 0 to 5).

3.3.3 Academic performance and commitment to the educational system

How engaged a student is in high school and his/her academic performance can both indicate ability as well as aspirations for higher education. To measure academic performance, average academic marks in the last year of high school are included. This measure is split into four broad categories: high, medium high, medium, and low, which correspond to overall grade-point averages of 80% to 100%, 70% to 79%, 60% to 69% and 59% or less, respectively. Issues related to commitment to the education system are measured via three factors. First, frequency of skipping or cutting classes is assessed via the question asking the students the number of times per month that they skipped classes without permission. Respondents were offered five response categories: 'never,' 'less than once a month,' 'once or twice a month,' 'about once a week' and 'more than once a week.' This measure is used as a continuous variable (ranging from 0 to 4) in the models. Second, number of hours spent each week in extracurricular school activities during the last year of high school is included, which is grouped into four categories: (1) none; (2) one to three hours; (3) four to seven hours; (4) eight hours or more. Third, future aspirations and commitment to the education system are taken into account by asking the youth the highest level of education they would like to obtain. This variable is categorized as follows: (1) high school or less; (2) some post-secondary; (3) college, trade or other diploma; (4) bachelor's degree or higher; and (5) undecided or do not know.

3.3.4 Potential barriers to high school completion and post-secondary education attendance

Last, the multivariate models need to take into account potential barriers to the eventual completion of high school as well as to starting PSE. There is a great deal of overlap between the factors from the previous section and this section in that a higher degree of commitment and better academic performance can be seen as non-barriers; however, in this paper, several specific measures are included that can be considered to be distinct barriers. First, working during high school has been linked to a greater risk of dropping out of high school (Sunter 1993) as well as slowing down the transition to PSE (Hango and de Broucker 2007;

Tomkowicz and Bushnik 2003). This variable is separated into four categories: no hours, one to less than 10, 10 to less than 20, and more than 20 hours per week. Second, extracurricular activities not organized by the school are included as a potential barrier since it may pull youth away from the education system and leave less time to be spent in school or on school-related activities.[5] This measure of extracurricular activities is coded as: no hours; one to three hours; four to seven hours; and eight hours or more per week.

The third barrier is measured as a dummy variable signifying whether the respondent (either male or female) had a child prior to age 18. The variable in YITS covers those children for whom the respondent is 'financially responsible and/or has sole or joint legal custody;' thus, the emphasis is placed on responsibility and not simply the occurrence of the birth event. The fourth barrier involves the effect of friends and peer networks via the measure asking respondents 'how many of your close friends were planning to continue with their education beyond high school.' A dummy variable equals1 if the respondent stated that 'some,' 'very few' or 'none' of their friends were planning on continuing; the reference category is 'most' or 'all.' The fifth barrier is related to potentially negative effects arising from changing high schools; this continuous indicator ranges from 1 to 4 or more.

The final measures related to barriers explicitly ask respondents 'Is there anything standing in your way of going as far in school as you would like to go?' Four dummy variables are included indicating whether finances, average marks, wanting to work or caring for children would be potential barriers to their academic aspirations.[6]

3.4 Method

Cox Proportional Hazard models (Cox 1972) are used to predict the 'risk' or chance of first PSE enrolment prior to age 28. The dependent variable is defined as the instantaneous rate of entry into first PSE and is specified as a function of time constant covariates. Cox's semi-parametric regression model, which does not make any assumptions about the shape of the hazard of starting PSE over time, can be expressed as follows

$$r_{(t)} = h_{(t)} \exp(bX)$$

where $r_{(t)}$ is the rate at which the respondent experiences the hazard of starting PSE at time t; $h_{(t)}$ is the baseline hazard rate at t, and X is a vector of time constant covariates. This instantaneous rate is defined as the ratio of the number of respondents entering PSE to the number of those who are still at risk of entering PSE. For all respondents, the observation period begins in the month following high school graduation and ends with the month they start PSE for the first time, or at the date of the last interview for those who had not yet started PSE (right censored cases).

All analyses are appropriately weighted and in addition standard errors are estimated using a replication approach in order to control for the survey clustered design. Thus, all results reflect standard errors derived from re-sampling each model 1,000 times using bootstrap weights (Statistics Canada 2003).[7] In all analyses the statistical program Stata Version 10.1 is used (StataCorp, 2008).[8]

4. Results

4.1 Median length of time between high school graduation and starting post-secondary education

The first step in addressing the issue of timing between high school graduation and the start of the first PSE program is to examine the median times between these two events. The pace and timing is not uniform across all individuals and subgroups of individuals and the median 'failure' times (defined as the median length of time between high school graduation and the start of first PSE) derived from life table analyses are very useful for gaining an overall picture of the issue. Table 1 presents the median failure times for the entire sample and separately by the covariates used in the later analysis.

Table 1

Median length of time between high school graduation and start of first post-secondary education

	Number of months
Average number of months	4
1. Demographic characteristics	
Gender	
Male	8
Female	3
Birthplace	
Outside Canada	3
In Canada	4
Aboriginal status	
Not Aboriginal	4
Aboriginal	15
Mother tongue	
English	14
French	3
Neither English or French	3
Province of high school	
Atlantic	3
Quebec	3
Ontario	15
West	13
Community type	
Rural	8
Population centre	3
2. Family factors	
Parents' highest level of education	
Less than high school	10
High school	14
Some post-secondary	13
Post-secondary graduate	3

Table 1 continued

Median length of time between high school graduation and start of first post-secondary education

	Number of months
Importance to parents that child obtains more than high school	
Not important	44
Slightly important	26
Fairly important	15
Very important	3
Frequency with which youth and parent talked about future education and career options	
Never	14
Less than once a year	15
A few times a year	4
A few times a month	3
A few times a week	3
Daily	9
Number of siblings	
None	3
One	3
Two	4
Three	8
Four	7
Five	15
3. Academic performance and commitment to education system	
Grade-point average in last year of high school	
High (80% to 100%)	3
Medium-High (70% to 79%)	8
Medium (60% to 69%)	19
Low (59% or less)	59
Frequency skipped/cut classes	
Never	3
Less than once a month	3
Once/twice a month	7
About once a week	15
More than once a week	15
Number of hours spent per week in extracurricular school activities	
Zero	15
1 to 3	3
4 to 7	3
8 or more	3
Highest level of education respondent would like to obtain	
Undecided	15
High shool or less	79
Some post-secondary	15
College/trade or other diploma	15
Bachelor's degree or higher	3
4. Potential barriers to high school completion and post-secondary attendance	
Number of hours of paid work per week in last year of high school	
Zero	3
1 to less than 10	3
10 to less than 20	4
More than 20	15
Number of hours spent per week in extracurricular non-school activities	
Zero	8
1 to 3	3
4 to 7	3
8 or more	7
Respondent had a birth by age 18[1]	
No	4
Yes	19

Table 1 concluded

Median length of time between high school graduation and start of first post-secondary education

	Number of months
Number of close friends planning to go to post-secondary education	
Most or all	3
None or very few	15
Number of high schools attended	
One	3
Two	7
Three	13
Four or more	15
Barriers specific to academic aspirations (Is there anything standing in your way of going as far in school as you would like?)	
Financial situation	9
Marks	14
Wanting to work	15
Caring for children	16

1. Includes biological births for males and females.

Source: Calculations by author. Statistics Canada, Youth in Transition Survey.

On average, the entire sample of high school graduates started their first PSE program no later than four months after leaving high school. This was also evident in Chart 1 as well. In terms of pertinent demographic characteristics, males, Aboriginal off-reserve youth and English speakers have much higher median delay times than others. The difference is especially dramatic for Aboriginal youth and Anglophones; these groups have, on average, a median delay time of about 15 months compared to their non-Aboriginal and non-Anglophone counterparts who waited only about 3 months to begin PSE.

Much of the trend observed in Quebec and the differences between Francophones and Anglophones can likely be attributed to the unique nature of their educational system. In Quebec, elementary/secondary education consists of 11 years of schooling. Students then typically enter a CEGEP which provides them with either a college-level education or, for students planning to go to university, a two-year pre-university program.

Geographic location such as province of high school and whether the youth lived in an area of a smaller population size at age 18 to 20 also appear to matter. For instance, in general, youth who attended high school in the Atlantic provinces or Quebec waited about 3 months to start PSE, while for youth in Ontario and the Western provinces, the wait time was much longer, at around 14 months. Youth not living in larger population centres also delayed the start of PSE for a longer period of time than their counterparts in larger population centres, at 8 months versus 3 months.

The family of origin exerts tremendous influence on young adults and their decision to complete high school and continue on to PSE. Each of the four indicators included appear to independently affect the timing of the beginning of PSE. For instance, youth with parents who were PSE graduates themselves tended to go immediately on to PSE, while those with parents with less education waited,

on average, at least 10 months. Even more important than the actual level of parental education, however, is the importance parents convey to their children of having a post-secondary education. For instance, the children of parents who felt this was very important were more likely to start PSE immediately after completing high school, whereas the median number of months waited by youth with parents who felt it was not important at all was more than 3 years (44 months).

At the same time, parental human capital may not be as effective in the absence of good parent-child communication. This appears to be occurring with this cohort of youth, in that high school graduates who spoke very infrequently or never with their parents about their future waited about 15 months, on average, to go to PSE. However, the analysis suggests that having a moderate amount of communication on this issue is crucial. Youth who spoke with their parents about their future educational plans a few times a year to a few times a week tended to go immediately to PSE following high school graduation, while those who had daily communications with their parents about the issue waited about 9 months. It may be that 'daily' communication is capturing those relationships where parents feel their adolescents need extra persuasion about the merits of PSE, which may be reflected in the longer median gap time. Last, as per a resource dilution hypothesis, the more siblings one has, the longer the gap between high school graduation and start of first PSE enrolment.

Four measures were used to tap into academic performance and commitment to education. Analyzing median time to first PSE by levels of these variables demonstrates the strong relationship each has with respect to the length of the gap between leaving high school and starting PSE. For example, with regard to marks in the last year of high school, respondents who had a high academic average did not delay PSE at all, while respondents with medium level marks waited about 19 months and those with low marks waited close to 5 years (59 months) to begin PSE. The impact of skipping/cutting classes also has an impact on the length of the gap, albeit not as strong as marks. Youth who skipped high school classes on average more than once a week had a median gap time of 15 months, compared to a median gap of 3 months for youth who had never skipped classes. A second indicator measuring commitment to education is the frequency of participation in school-related extracurricular activities, assessed on a weekly basis. While many of these activities may not be directly related to academics, they do serve as an indication that the youth is committed to being involved in activities organized by the school. Table 1 reveals that youth who did not partake in any extracurricular school activities had a median delay time much higher than youth who had participated, at 15 months versus 3 months. Last, in terms of educational aspirations beyond high school, students who wanted higher levels of education did not delay PSE attendance at all; in contrast, youth who aspired to only high school or less waited, on average, close to 80 months.

At the same time as discussing factors that enhance the probability of pursuing PSE after high school, we must also be cognizant of the factors that impede it. Several such indicators are used in this paper. First, in line with past research, the present results also suggest that working a lot in high school (more than 20 hours a week) greatly curtails the pace with which high school graduates start PSE. These individuals waited, on average, about 15 months to start PSE, in contrast to the median time of 3 months for youth who worked less. Time spent in

extracurricular activities external to school highlights a somewhat different relationship than those organized within school: youth who spent no hours or 8 or more per week appeared to delay the start of PSE more than youth who took part in a moderate amount of non-school extracurricular activities. Thus, there is some initial evidence to suggest that not all extracurricular activities are indicative of an early start to PSE following high school graduation.

Next, the role of early family responsibilities on the median number of months between high school graduation and start of PSE is analyzed. Youth who were responsible for a child before their 18th birthday delayed the start of PSE by close to 2 years, while youth without this responsibility tended to go to PSE immediately. The influence of friends on educational decisions is quite strong; youth tend to follow a similar pattern to their close friends. The pattern holds in these data as well: youth with most close friends who decided to go to PSE went within 3 months of high school graduation; however, if none or very few of their close friends planned to go, the median wait time was 15 months. Last, there is a well-established link between residential mobility and educational attainment — typically, the more times a student moves, the less likely he or she is to finish high school and the lower their chances of going to PSE. The same pattern is observed here as well with regard to timing — youth who attended one high school only tended to go to PSE immediately after high school graduation, while the median delay time increased each time the student moved to another school, peaking at 15 months if they attended 4 or more different high schools.

The last set of barriers to education directly addresses these obstacles via the question 'Is there anything standing in your way of going as far in school as you would like?' Four potential barriers are included in this paper: finances, marks, wanting to work, and caring for children. Each of these barriers increases the median delay time past the 4 month median observed for the total sample: those who listed finances as an impediment had a median delay time of 9 months; concerns about marks led to a delay time of 14 months; wanting to work led to a delay of 15 months; while youth who said that caring for children would affect their educational aspirations had a median delay time of 16 months.

4.2 Rate of entry to first post-secondary enrolment

Table 2 presents the parameter estimates predicting the 'risk' of entry into a first PSE program prior to age 28 for individuals who had graduated from high school. Five separate models are estimated. Model 1 includes only variables measuring demographic characteristics and geographic location. Model 2 adds pertinent family background factors to indicators from Model 1. Model 3 adds to Model 1 measures related to academic performance and commitment to the education system, and Model 4 adds potential barriers to high school completion and PSE attendance. Finally, in the full Model (Model 5) all measures are included. The estimates are presented as hazard ratios (e^{β}) for ease of interpretation. All results are reported with respect to the monthly chance of starting a first PSE program.

Table 2

Parameter estimates (hazard ratios) on the rate of entry into first post-secondary program, Cox Regression Models

	Model 1	Model 2	Model 3	Model 4	Model 5
			hazard ratios		
1. Demographic characteristics					
Female (Male)	1.2047***	1.2042***	1.0850***	1.1651***	1.0929***
Canadian born (Not Canadian born)	1.0193	1.0810	1.0569	1.0020	1.0796
Aboriginal (not Aboriginal)	0.7844**	0.8396*	0.9565	0.8482	1.0112
Mother tongue (English)					
French	1.0535	1.0935	1.0821	1.1187	1.1368*
Neither English or French	1.3035***	1.2979***	1.2322***	1.2708***	1.2146***
Province of high school (Ontario)					
Atlantic	1.1349***	1.1546***	1.1193***	1.1132***	1.1281***
Quebec	1.7165***	1.7216***	1.8287***	1.7185***	1.7937***
West	0.8798***	0.9384*	0.9194**	0.9193**	0.9848
Lived in larger population centre in high school (Rural)	1.1859***	1.0477	1.1163***	1.2145***	1.0579*
2. Familial factors					
Parents' highest level of education Level (Less than high school)					
High school	...	1.0970	...	...	1.0672
Some post-secondary	...	1.2026**	...	...	1.1055
Post-secondary graduate	...	1.4279***	...	...	1.2205***
Importance to parents that child obtains more than high school (1 to 4)	...	1.4359***	...	...	1.2769***
Frequency with which youth and parent talked about future education and career options (A few times a month)					
Never	...	1.0912	...	...	1.2059
Less than once a year	...	0.7629**	...	...	0.8429
A few times a year	...	1.0560	...	...	1.0622
A few times a week	...	0.9053**	...	...	0.9233*
Daily	...	0.8354***	...	...	0.8972**
Number of siblings (0 to 5)	...	0.9539***	...	...	0.9731*
3. Academic performance and commitment to education system					
Grade-point average in last year of high school (70 to 79%)					
High (80% to 100%)	...	...	1.2484***	...	1.2119***
Medium (60% to 69%)	...	...	0.7179***	...	0.7314***
Low (59% or less)	...	...	0.6251**	...	0.6690**
Frequency skipped/cut classes (0 to 4)	...	...	0.9592***	...	0.9771*
Number of hours spent per week in extracurricular school activities (1 to 3)					
Zero	...	...	0.8938***	...	0.9590
4 to 7	...	...	1.0914**	...	1.0928**
8 or more	...	...	1.1332***	...	1.1252***
Highest level of education respondent would like to obtain (Bachelor's degree or higher)					
High school or less	...	...	0.3046***	...	0.4214***
Some post-secondary	...	...	0.5138***	...	0.5947***
College/trade or other diploma	...	...	0.6250***	...	0.6923***
Undecided	...	...	0.7569***	...	0.8382**
4. Potential barriers to high school completion and post-secondary attendance					
Number of hours of paid work per week in last year of high school (Zero)					
1 to less than 10	...	...	...	0.9890	0.9950
10 to less than 20	...	...	...	0.9700	0.9844
More than 20	...	...	...	0.7913***	0.8942***
Number of hours spent per week in extracurricular non-school activities (1 to 3)					
Zero	...	...	...	0.8347***	0.9333*
4 to 7	...	...	...	0.9590	0.9384
8 or more	...	...	...	0.9053**	0.9025**

Table 2 concluded

Parameter estimates (hazard ratios) on the rate of entry into first post-secondary program, Cox Regression Models

	Model 1	Model 2	Model 3	Model 4	Model 5
			hazard ratios		
Respondent had a birth by age 18 (Did not)[1]	...	...	...	0.7622	0.7591
Some, few or no close friends were planning on going beyond high school (Most or all)	...	...	...	0.6193***	0.7687***
Number of high schools attended (1 to 4 or more)	...	...	...	0.8838***	0.9421**
Barriers specific to academic aspirations (Is there anything standing in your way of going as far in school as you would like?)					
Financial situation	...	...	...	0.9237**	0.8953***
Marks	...	...	...	0.8612**	0.8624**
Wanting to work	...	...	...	0.7429**	0.8238
Caring for children	...	...	...	0.6372***	0.7565*

* p<0.10, statistically significant at the 10 per cent level

** p<0.05, statistically significant at the 5 per cent level

*** p<0.01, statistically significant at the 1 per cent level

1. Includes biological births for males and females.

Note: Reference Category and Variable Metric in Parentheses.

Source: Calculations by author. Statistics Canada, Youth in Transition Survey.

4.2.1 The impact of demographic characteristics and geographic location on time to first post-secondary education

Female high school graduates start their first PSE program at a faster pace than males. Results from Model 1 show that being a female high school graduate increased the monthly chance of starting a first PSE program by a factor of 1.2047, or by 20.5%. While this effect is diminished in Model 5 after all other factors have been considered, it remains very significant. Aboriginal youth, in contrast, had a decreased monthly chance of starting PSE after completing high school by about 20%, as compared to non-Aboriginal youth. However, this effect is completely removed in Model 5 after all other factors are included. In terms of mother tongue, speakers of a non-official language were more likely than English speakers to start PSE (hazard ratio of 1.3035 in Model 1). This effect remains even in Model 5. Province of high school also elicits a strong impact on the timing of first PSE. Using Ontario as the reference category, it is noted in Model 1 that youth who attended high school in the Atlantic Provinces and Quebec had a 13% and 72% greater monthly chance, respectively, of starting PSE, while youth from the West had 12% less chance of this occurring. This latter effect is removed in Model 5, however, when all factors are included. Last, high school graduates from larger population centres areas went on to PSE at a quicker pace than their rural counterparts, an effect which mostly disappears by the final model.

4.2.2 The impact of family background

Four indicators related to the influence of the family were included in the analysis. Each exerts some influence on the length of the gap between high school completion and the beginning of PSE for high school graduates. Model 2 reveals that youth with more highly educated parents began PSE faster than other youth, especially when comparing parents with university degrees to parents with less than high

school. Children of PSE graduates had about a 43% greater monthly chance of starting PSE than youth whose parents had less than high school (Hazard ratio of 1.4279). Not only is the level of parental education important, but equally vital, if not more so, is the importance parents place on their child's education. For example, for each one-point increase on the scale rating the importance that parents place on their children obtaining more than high school, youth have an increased monthly chance of starting PSE by almost 44%. This effect is reduced, yet still significant, in Model 5.

Similarly, the amount of communication that parents and young adults have regarding future career and educational paths was found to matter as well. A medium amount of communication was used as the reference category (talked a few times a month about future educational plans). Results from Table 2, Model 2 suggest that talking less frequently than this or a great deal more than this, reduces the chances of having a shorter gap between high school and PSE studies. For instance, students and their parents who talked about the future on a daily basis saw their monthly chances of starting PSE reduced by about 16%, compared to youth and parents who only talked a few times a month about their future plans. This effect remains consistent, albeit slightly weaker in the full model. Interestingly, never talking about future and career options had no significant effect on the pace with which high school graduates went on to PSE. In fact, counter intuitively, the effect, while not significant is positive. Last, number of siblings was included as a control for resource dilution in the household. This indicator is necessary because YITS-Cohort B does not have any information on the financial situation of the family of origin. The only socioeconomic indicator is parental education; therefore, number of siblings acts as a proxy for fewer resources being available to youth from larger families. The results show that, even in the full model, having a greater number of siblings reduces the chances of continuing on to PSE; each additional sibling reduces the monthly chance of starting a first PSE program by a factor of 0.9731, or by 2.7% (1-0.9731).

4.2.3 The impact of academic performance and commitment to education

The sole variable available in YITS-Cohort B that directly measures academic performance is self-reported grade-point average (GPA) in the last year of high school. It is a subjective measure, which could be inflated (Maxwell and Lopus 1994); however, it does correlate highly with other indicators that signify higher academic achievement (e.g., attendance at university). Using a GPA of 70% to 79% as the reference category, we observe that high school graduates with a GPA of 80% to 100% had an increased chance of attending PSE, while those whose marks were lower experience a decreased chance of attending PSE. At the same time, the monthly chance of attending PSE decreased by close to 5% as the frequency of skipping classes increased. These two effects remain robust across all models.

The results for amount of time spent on school-based extracurricular activities suggests that partaking in a moderate amount (1 to 3 hours per week) is predictive of a greater chance of attending PSE compared to taking part in no hours at all. Furthermore, as the number of hours spent in school-based extracurricular activities increased, so too did the chances that high school graduates would go on to PSE more quickly. For example, high school graduates who spent 8 or more hours per

week in these activities increased their chance of PSE attendance by 13% in each month, compared to high school graduates who only spent 1 to 3 hours per week in school-based extracurricular activities.

The final measure of commitment to education is based on a question that asked the young adults about their academic aspirations. High school graduates who said they wanted a bachelor's degree or higher had a greater monthly chance of attending PSE than any other desired level of schooling, including college. In fact, results from Model 3 suggest that aspiring to a college/trade or other type of diploma decreases the chance of PSE attendance by almost 40% (1-0.625), compared to wanting a bachelor's degree or higher. Not surprisingly, the largest decline in the chance of PSE attendance is observed for high school graduates who only desired a high diploma or less: these individuals had almost a 70% less chance each month (1-0.3046) of attending PSE than youth who stated they wanted a bachelor's degree.

4.2.4 Potential barriers to high school completion and post-secondary education attendance

The final six sets of indicators tap into factors that deter high school completion as well as eventual PSE attendance. First, the influence of working in a paid job during the school year is considered. When compared with not working at all, the only significant difference is found for working more than 20 hours a week. These individuals had about a 20% less chance per month of attending PSE than their counterparts who did not work at all. This result remains robust in all models.

In the previous section, school extracurricular activities were utilized as an indicator tapping into greater school commitment; however, the question remains as to whether activities external to school have a similar impact on the pace with which high school graduates go on to PSE. To address this question, a measure of number of hours spent per week in non-school extracurricular activities in the last year of high school is included. Similar to before, 1 to 3 hours of such activity is the reference category. A somewhat different relationship is found: young adults who spent 8 or more hours per week on these activities external to school saw their monthly chance of going to PSE diminished by about 10%. Thus, time spent doing activities away from school may be indicating a preference for non-academic pursuits and this in turn affects the pace with which high school graduates go on to further studies.

During high school, close friends can have a great deal of influence on decisions related to future educational paths. The results from Table 2, Model 4 confirm this. High school graduates who said that only some, few or none of their close friends were planning on going to PSE had almost 40% less chance (1-0.6193) each month of going to PSE than their counterparts with most or all friends going to PSE. Equally important during the high school years is the instability caused by changing schools. A great deal of past work has found that changing schools disrupts important networks, which can have lasting effects. The results here confirm this as well: the monthly chance of PSE attendance declines by over 10% (1-0.8838) with each new high school attended, a result that remains relatively robust even in the full model.

The final set of barriers to high school completion and PSE attendance are based on youth responses to the question: 'Is there anything standing in your way of going as far in school as you would like?' High school graduates who said that caring for children was a barrier had the largest hazard ratio — these individuals saw their monthly chance of PSE attendance decrease by close to 40% (1-0.6372) in Model 4 (the effect was weakened, however by Model 5). Wanting to work also decreased the chance of PSE attendance; however, this effect was completely removed in Model 5 once all other factors were included. At the same time, the negative effects of finances and marks remain robust and strong across all models. Interestingly, the dummy variable for whether the respondent had a child for whom they were responsible prior to age 18 was not significant in either Model 4 or 5.[9]

5. Discussion

This paper set out to describe and analyze the timing of going on to pursue PSE for a sample of Canadian high school graduates. The Youth in Transition Survey was used to examine median delay times between high school graduation and the start of the first PSE program up until age 28, as well as the important covariates affecting this transition. Generally speaking, almost half of high school graduates started PSE within four months of graduating from high school, while by fifteen months, close to three quarters had started. These results are consistent with what other research using the same data have discovered. For instance, Tomkowicz and Bushnik (2003) found that close to 60% of high school graduates started PSE within 12 months, while Hango (2008) found that around 40% had started by 4 months. Slight differences between the current study and those published previously with these data are normal given differences in sample selection and the fact that the current study is the first to analyze these delay times using event history methods. The current findings are also quite similar to those presented in the United States. Bozick and DeLuca (2005) for example found that about 67% of high school graduates started their first PSE program within seven months of leaving high school. Meanwhile, information on deferral rates in the United Kingdom (UCAS 2010) suggests that each year between 2003 and 2010, about 7% to 7.5% of graduates deferred entry for one year into UK institutions of higher education.[10]

The results can be summarized into essentially five main areas: structural, time use, PSE enrolment, attitudes and aspirations, and peer effects.

First, factors related to the structure of the education system proved to be influential. For example, a descriptive life table analysis shows that most young adults go on to PSE during those months that appear to correspond to normative start dates, i.e., in the autumn. Chart 1 showed that PSE start rates increased much faster around the 3- to 4-month mark, the 15- to 16-month mark and the 27-to 28-month mark, points that roughly correspond to the autumn of the year when high school graduates left school, the autumn of the year after they left school (12 months plus 3 or 4 months), and then in the following autumn (24 months plus 3 or 4 months). Thus, even though young adults are making the decision to delay or to go directly to PSE after high school, they remain bound by the structure and deadlines of post-secondary institutions. Therefore, some degree of planning is necessary if they desire to return to the education system. For instance, if a high school graduate decides not to go to university in the autumn of the year they graduate, then they will have to start planning for their return to school several months later as their application for autumn enrolment will likely be due between January and July, depending on the institution. Also, there is the issue of 'deferral' of a program. Most universities, for instance, allow accepted students to defer their start date for a semester or for an entire year. Undoubtedly, high school graduates who decide to take a gap year and who have already been

accepted to a PSE program likely approach their time out of school differently than those who have not been accepted. The former's future is more clearly defined and, as a result, they may be able to plan their gap period activities somewhat better than high school graduates who have not yet been accepted into a PSE program. These are simply hypotheses at this point since the data necessary to measure these effects were not available for the current study.

Related to the structure of the education system was the finding that high school graduates from Quebec and the Atlantic Provinces had lower median delay times than the average, while high school graduates from Ontario and the West had longer delay times. The effect in Quebec is the most obvious due to the CEGEP system which requires attendance for subsequent university enrolment. Thus, on average, Quebec high school graduates enter PSE at earlier ages than the rest of the country, simply because of the structure of the educational system in Quebec. Also, tuition fees have generally been lower in CEGEPs and Quebec universities and as a result, fewer youth likely had to delay PSE attendance for financial reasons. Similar results were reported by Tomkowicz and Bushnik (2003) who found that, when compared to high school students from Ontario, youth from Quebec were more likely to go to PSE within one year, whereas youth from Alberta, Manitoba and Newfoundland were more likely to wait more than one year.

Second, several of the findings reported here are associated more generally with issues related to time use during adolescence. For example, factors that appear to pull high school students away from their studies or that inhibit further study outside of school often have a negative impact on the pace with which they go on to post-secondary studies. One of the most influential was working in high school, but only at very high levels. High school graduates who worked more than 20 hours a week had a much lower chance of entering PSE. These results are quite robust when we consider that they are in accordance with other Canadian sources using the same data, but somewhat different definitions of gap (Tomkowicz and Bushnik 2003; Hango and de Broucker 2007). Moreover, this corresponds to the difficulties young adults face attempting to combine academic and employment-related behaviour (Marsh and Kleitman 2005).

A further activity that can divert time and attention away from academic pursuits is extracurricular activities. The effects on education vary, however, depending on the activity and whether or not it is organized through the school (Darling 2005; Eccles et al 2003). The results reported here are consistent with the literature. On the one hand, participating in many hours (from 4 to 8 or more) of extracurricular activities per week that were organized by the school led to a shorter duration between high school graduation and the start of PSE. On the other hand, participating in a high frequency of extracurricular activities each week that were not organized by the school led to a delay in the commencement of PSE. These results correspond with those found by Broh (2002) and Chambers and Schreiber (2004) in the United States. They found that activities that required more commitment to school and that were more organized led to better educational outcomes than those activities that required less commitment and were less organized.

Third and not surprisingly, factors affecting the possibility of enrolment in PSE had an effect on the timing of PSE enrolment as well. For instance, marks are one of the most important factors determining access to PSE; it was found here as well that higher marks sped up the transition to PSE for young adults who had graduated from high school. The effect remained very robust in the presence of all other controls. This finding is in line with those of Tomkowicz and Bushnik (2003) and Bozick and DeLuca (2005). The effect of poor marks is also demonstrated by the result that youth who state that marks will be a barrier to educational goals had a much lower chance of attending PSE.

Also important for eventual PSE attendance is the socioeconomic position of the family which, in the present analysis, was measured using parental education and number of siblings, the latter being used as a proxy for fewer resources being available in larger families for each child. Young adults who had parents who had graduated with a PSE diploma or degree had a much greater chance of going to PSE themselves compared to young adults whose parents achieved less than high school. Bozick and Deluca (2005) found very similar effects in the United States using the National Education Longitudinal Study (NELS). The number of siblings proved to be an important finding as well in that, for each sibling added to the household, the chance of pursuing PSE declined. This effect ties in with the more general literature on resource dilution and educational attainment (see Downey 1995). Equally strong was the relationship between the youth's perception of how financial difficulties may subvert their academic goals. Young adults in this sample who felt that finances would negatively impact their academic aspirations had a much lower chance of going to PSE.

Fourth, factors related to attitudes and aspirations toward education in general proved to be important for the timing of going on to PSE. Generally, it was found that higher educational aspirations led to a greater chance of going to PSE. The effect was found for parental aspirations as well as for aspirations of the young adults themselves. Hango and de Broucker (2007) also found parental expectations to be important for whether there was a gap after high school, but these effects were contingent on whether the high school graduate eventually received a university degree. The current findings do not take final education level into account, however. With regard to the effect of the youth's educational aspirations, it is not surprising, given the link between academic aspirations and educational attainment (Hagan, MacMillan and Wheaton 1996), that youth with high aspirations do not delay PSE attendance as long as youth with lower aspirations.

Fifth, effects related to peers were found to be robust across all models. Similar to Tomkowicz and Bushnik (2003), there was a strong negative relationship between the timing of PSE and having few close friends who planned to go to PSE themselves — 26% of youth who delayed one year or more had some, few or no close friends planning on going to PSE, while the comparable percentage for youth who went within one year was 16%. Similarly, the median delay for high school graduates with some, few or no close friends going to PSE was 15 months, compared to 3 months if most or all close friends planned to go to PSE. These findings are consistent with other research that examines the effect of peers on educational aspirations and behaviour more generally (Ryan 2000; Brooks 2003).

Residential mobility is often thought to negatively affect education-related outcomes (Pribesh and Downey 1999; Swanson and Schneider 1999). The driving mechanism may range from a loss of important relationships (Coleman 1988), stress (Haveman, Wolfe and Spaulding 1991) or the impact of new peer groups for mobile adolescents (South, Haynie and Bose 2007). The current finding that the chance of starting PSE declines with each new high school attended fits in with this prior literature. However, given the structure of the current data and measures, it is impossible to pinpoint exactly why changing high schools lowers the chance of attending PSE. Regardless of reason, the robust relationship between changing schools and the timing of the start of PSE for high school graduates indicates that it is an important control measure.

6. Limitations and future analyses

This report provides an initial glimpse into the timing of the start of the first post-secondary program of high school graduates in Canada. It is intended to offer a useful background for future work that could explore the issue in more detail. Three limitations of the current study that should be addressed in future work focus on the following issues: activity during the gap year; type of first PSE institution; and lack of some important control variables.

An important avenue for future research would be to explore the types of activity that students engage in during the 'gap' period. Was the time away from school 'productive'? Were the gappers working? If so, what was the quality of the jobs they held? If they were not working, what were they doing? Were they travelling? If so, what were they doing on their travels? For example, were those travels organized, were they working abroad?

These are important concerns that can only be partially addressed with the YITS data. For example, using YITS, it should be possible to determine work patterns for the majority of high school graduates who did not go on to PSE directly using monthly activity variables. There is no information on other activities the high school graduate may have done during the time away from school. The information regarding employment is important, however, since it provides a look at early labour market experiences and provides an indicator as to whether youth were involved in something productive during their time away from school. What these employment variables cannot tell us, however, is whether the high school graduates gained anything from their experiences and whether it was beneficial in terms of increasing their maturity (Heath 2007). A more specialized survey would be needed to acquire this type of information.

Another useful avenue for further research would be to examine the relationship between having a gap between high school and the type of first PSE institution. There is a great deal of heterogeneity between university, college, trade and technical school in terms of entrance requirements and eventual labour market outcomes. It may be that different patterns of timing would be observed depending on which type of PSE program youth pursued following the gap period. For instance, high school graduates who go to university typically must expend more time and money than those who go to college, since university programs tend to be longer and more expensive. As a result, those going on to university who needed to work during their time away may spend more time out of the education system than those who pursued college studies. YITS information on the type of first PSE institution is held in institution and program rosters that are updated every survey cycle. Utilizing this type of information would allow for analyses using a 'competing risk' approach, with different types of PSE institutions considered to be competing because they are mutually exclusive, i.e., only one type of transition can occur at a given point in time.

Finally, future research could include selected control variables that were not included in the analysis reported here. For instance, marks were used as a measure of academic ability; however, these are self-reported and may be subject to bias (Maxwell and Lopus 1994). A better measure would be objective academic test scores on various subjects. For instance, the Programme for International Student Assessment (PISA) includes three objective test scores related to reading, mathematics and science. In Canada, PISA is linked with the 15-year old cohort of YITS (Bushnik, Barr-Telford, and Bussière 2004; Bussière, Cartwright, Crocker, Ma, Oderkirk and Zhang 2001). These measures, especially the reading assessment, have been used extensively. For example, Knighton and Bussière (2006) found that high reading scores at age 15 were strongly related to a greater chance of graduating from high school and to a greater likelihood of enrolment at a post-secondary institution by age 19. The relationship between test scores and probability of delaying PSE attendance would likely be the same as those found here using marks. However, it remains an interesting avenue of research to pursue in the future.

Another useful measure that could be included in future analyses is distance between high school and post-secondary institution. Frenette (2006) for example found that young adults who lived outside commuting distance to a university had a lower likelihood of attending university. In the current paper, the only factor that can approximate for this is the use of the indicator of population size of the community in which the respondent lived, which indicated that youth from areas of greater population size were less likely to delay the transition to PSE. Thus, a greater distance from university would likely also slow down the timing to first enrolment.

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Endnotes

1. Approximately 5% of the sample of 9,946 left high school without graduating and had not returned to complete their high school diploma by December 2007.
2. Within survival analysis, the term 'risk' essentially signifies the probability that the event will occur at a given time period.
3. In survival analysis terminology, right censoring is defined as when the failure event, in this case the date of first PSE enrolment, occurs sometime after the respondent is no longer under observation.
4. A handful of respondents who went to high school in the Yukon were included with Western Canada.
5. Alternatively, this measure may also be picking up discrepancies in school resources; perhaps youth who partake in nonschool activities do not have the option of registering in school activities. This type of information however is not available in YITS.
6. Some exploratory analysis revealed that these four barriers were the most detrimental to returning to school, they are also useful because they encompass a broad range of issues from problems with money and family to wanting to work instead of going to school.
7. For more complete information the reader is advised to consult the user guide for these data (Statistics Canada 2003).
8. Specifically, the *svy* procedure is used in Stata 10. This version of Stata enables researchers to utilize the 1000 bootstrap weights in YITS for the estimation of Cox Proportional Hazard models.
9. In earlier models (not shown) this dummy variable was removed by the addition of family factors in Model 2; likely because of the strong link between the family of origin, especially SES, and the risk of having a teen birth (Furstenberg 2003).
10. These deferral rates are admittedly somewhat different; however, no comparable published figures similar to those using YITS in Canada or NELS in the United States are available from the United Kingdom (Jones 2004).

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81-595-M No. 003	Finding their way: a profile of young Canadian graduates
81-595-M No. 004	Learning, earning and leaving – The relationship between working while in high school and dropping out
81-595-M No. 005	Linking provincial student assessments with national and international assessments
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